

Application No.: 10/813,624

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**REMARKS**

**I. Introduction**

In response to the pending final Office Action, Applicants have amended claim 1 in order to further clarify the present disclosure. Support for the amendment to claim 1 may be found, for example, in Table 1 on page 31 of the specification, and claim 20. No new matter has been added, and no new considerations introduced, as the limitation added to claim 1 was previously considered in claim 20. Entry of this amendment is respectfully requested.

Applicants appreciate the granting of an interview with the Examiner on April 30, 2008, during which Applicants discussed the § 102 and 103 rejections over claims 1-3, and 19-24, especially the issue of copper atom impurities.

For the reasons set forth below, Applicants respectfully submit that all pending claims as currently amended are patentable over the cited prior art.

**II. The Rejection Of Claims 1-3 And 19-24 Under 35 U.S.C. § 102/§ 103**

Claims 1-3 and 19 are rejected under 35 U.S.C. § 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Higashi et al. (U.S. Pat. No. 7,045,950) and claims 1-3 and 19 are rejected under 35 U.S.C. § 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Toguchi et al. (U.S. Pat. No. 6,565,993). In addition, claims 20-24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Toguchi in view of Turner et al. (USP No. 4,764,625). Applicants respectfully submit that Higashi, Toguchi and Turner all fail to anticipate, or render obvious, the above cited claims for at least the following reasons.

**Application No.: 10/813,624**

With regard to the present disclosure, amended claim 1 recites, in part, an organic electroluminescent device comprising: an organic compound layer including at least one organic compound film containing an organic compound having a phenylamino group, wherein said organic compound having a phenylamino group is produced by Ullmann reaction, and said organic compound layer contains copper atoms as impurities in a weight concentration of not less than 40 ppm and not higher than 500 ppm.

One feature of the present disclosure as recited in amended claim 1 is an organic compound film that contains copper impurities in a concentration of 40 to 500 ppm.

In contrast to amended claim 1, Higashi et al. and Toguchi et al. are silent concerning copper impurities. Higashi discloses the presence of halogen impurities (see, col. 32, lines 8-47 of Higashi). Accordingly, it is clear that although Higashi discloses an impurity level of 1000 ppm or less, Higashi is clearly referring to halogen impurities, not copper impurities. In fact, Higashi does not even measure the copper powder remaining in the reaction product. Moreover, it is admitted in the Office Action that Toguchi fails to disclose any impurities. Accordingly, it is clear that Higashi and Toguchi, alone or in combination, do not teach or suggest an organic compound layer which contains copper atoms as impurities in a concentration of not less than 40 ppm and not more than 500 ppm.

With regard to the § 103 rejection of claim 20 over Toguchi in view of Turner, claim 20 recites, in-part, an organic compound layer which contains copper atoms as impurities within a weight concentration range of about 40 ppm to 500 ppm.

It is admitted that Toguchi fails to disclose a compound layer having copper impurities. However, because Turner discloses the use of the Ullmann reaction, it is suggested that it

**Application No.: 10/813,624**

compounds formed by the Ullmann process would be expected to have a similar level of copper impurities as recited in the claims. Yet, the concentration of copper atoms is not disclosed or even discussed in Turner. Accordingly, Turner provides no evidence regarding the level of copper impurities derived from the Ullmann synthesis. However, Table 1 of the present specification shows compounds with a range of copper impurities ranging from 40 to 1500 ppm, all of which were produced by the Ullmann synthesis. As such, it is clear that the Examiner's allegation that the similar level of impurities would be produced in each compound is unsupported.

Moreover, as is shown in Table 1 of the specification, devices having a range of copper atom content within the range recited in claim 20 of the present disclosure exhibit significantly better and unexpected results in terms of the luminous efficiency and luminescent lifetime of an EL device than those outside the claimed range. As the results are superior and unexpected, and as the cited prior art does not discuss the effects of varying copper atom content, the unexpected results in Table 1 of the present specification overcomes the Examiner's assertion of obvious. Furthermore, because Turner fails to teach or suggest a copper impurity level of the claimed range, it is clear that Turner fails to disclose the unexpected results derived from the claimed range. As such, the combination of Toguchi and Turner does not render claim 20 obvious.

Furthermore, claim 22 recites an organic electroluminescent device comprising: an organic compound layer including at least one organic compound film containing an organic compound having a phenylamino group, wherein copper atoms are present in the organic compound layer, said copper atoms can be detected, and are present in a weight concentration of not higher than 500 ppm. As such, claim 22 explicitly states that copper atoms are present in the organic layer. As this limitation eliminates the possibility of zero copper atoms present in the

**Application No.: 10/813,624**

layer, it is clear that Toguchi and Turner, which both fail to disclose copper atoms at less than 500 ppm, do not render claim 22 obvious.

As the Examiner is aware, anticipation under 35 U.S.C. § 102 requires that each element of the claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983). Moreover, in order to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 180 USPQ 580 (CCPA 1974). As Higashi, Toguchi and Turner all fail to disclose an organic electroluminescent device comprising: an organic compound layer including at least one organic compound film containing an organic compound having a phenylamino group, wherein said organic compound layer contains copper atoms as impurities in a weight concentration of not less than 40 ppm and not higher than 500 ppm, it is clear that Higashi, Toguchi and Turner fail to anticipate, or render obvious, claims 1, 20 and 22. Therefore, it is respectfully requested that the rejection of claims 1, 20 and 22 under § 102 and § 103 be withdrawn.

**III. All Dependent Claims Are Allowable Because The Independent Claim From Which They Depend Is Allowable**

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claims 1, 20 and 22 are patentable for the reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

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Application No.: 10/813,624

**IV. Conclusion**

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication of which is respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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